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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): VOSS-35194US1

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Application Number	Filed
10725795	December 2, 2003

First Named Inventor: Chieh Ou-Yang

Art Unit	Examiner
1792	Kirsten C. Jolley

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 48719.
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

/stevenjsolomon/
Signature

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September 10, 2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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Claim 1 is the only independent claim pending. It has been rejected under 35 USC § 102(b)/103(a) as being anticipated by or obvious over Shirley. It has also been rejected under 35 USC § 103(a) as being obvious over Kim in view of Thakur.

Rejection under 35 USC § 102(b) over Shirley

Shirley's device contains a chill plate assembly 20 having a plate temperature controller 50a, and a coater bowl assembly 30 having a bowl temperature controller 50b (*see* Fig. 1). The chill plate assembly 20 and its temperature controller 50a are described first, beginning at col. 3, line 25. There, it is explained that the plate temperature controller 50a has a fluid supply 51a coupled via conduits 53a (plural) to manifolds 54a (again, plural).

Subsequently, the coater bowl assembly 30 and its temperature controller 50b are described, beginning at col. 4, line 43 and continuing into column 5. There, Shirley states:

> In one embodiment, the temperature controller 50b includes a fluid supply 51b coupled to a *single heat exchanger 52b* which is in turn coupled with a conduit 53b to a *single manifold 54b*. * * * In another embodiment, the bowl temperature controller 50b can include a *plurality of heat exchangers 52b and manifolds 54b*, arranged in a manner generally similar to that discussed above with reference to the plate temperature controller 50a.

Col. 4, line 58 to col. 5, line 14 (emphasis supplied).

The last quoted sentence is the focus of the Section 102 rejection. The Examiner has argued that this sentence means the bowl temperature controller 50b (or at least its nozzles 55b) can be located *above* the substrate 70, similar to nozzles 55a of the plate temperature controller 50a, as described at col. 4, lines 20-22. This interpretation is contrary to what is expressly described. The plain meaning of the quoted language is simply that "a plurality" of heat exchangers and manifolds 52b,54b is an alternative to the "single" heat exchanger and manifold described previously. This is clear from the fact that Shirley expressly describes the "single" heat exchanger/manifold structure, and then discloses a "plurality" of these as an alternative. The statement, "arranged in a manner generally similar to…the plate temperature controller 50a," is a reference to the fact that multiple heat exchangers and manifolds 52a and 54a have already been described for the plate temperature controller 50a, as illustrated in Fig. 1. In other words, the sentence merely states that like the plate temperature controller 50a, the bowl temperature controller 50b also can have multiple heat exchangers and manifolds instead of the "single" manifold and heat exchanger illustrated. There is no implication that the location of the

bowl temperature controller 50b can or should be changed, to place it above the substrate. In fact, quite the opposite inference is appropriate from Shirley.

That reference clearly disclosed the orifices 55a of the plate temperature controller 50a could be "positioned proximate to [sic] the front side 72 (rather than the back side 71) of the substrate 70…." Col. 4, lines 20-22. In contrast, there is no such teaching for the bowl temperature controller 50b or any of its components. Had Shirley intended such an alternative, the reference could have easily described it. Doing so would have required the insertion of only two words in the last sentence quoted above: "…arranged and located in a manner generally similar to that discussed above with reference to the plate temperature controller 50a." Yet Shirley contains no such teaching.

In summary, the plain meaning of the quoted language from Shirley does not disclose or teach positioning the bowl temperature controller 50b above the substrate as the Examiner has argued. Furthermore, quite the opposite inference can be drawn from Shirley given the differences between the way the bowl- and plate-temperature controllers 50b and 50a are described. For these reasons, the Examiner's interpretation of Shirley to reject claim 1 under 35 USC § 102(b) is incorrect.

Rejection under 35 USC § 103(a) over Shirley

The Examiner has argued that:

> it would have been obvious to…have incorporated the optional embodiments of the chill plate assembly [50a] (such as positioning the orifices [55a] above the substrate rather than below the substrate) in Shirley's coater assembly [50b]…with the expectation of similar and successful results because both Shirley's chill plate and coater assemblies have similar structures, effects, and purposes – to similarly provide heating or cooling to selected areas of a substrate, and because Shirley specifically teaches the incorporation of the features of the chill plate assembly into the coater bowl assembly.

Office action, p. 6.

First, as already explained, Shirley does not specifically teach incorporating the 'location of the orifices' feature of the chill plate assembly (plate temperature controller 50a) into the coater assembly (bowl temperature controller 50b). In fact, quite the opposite inference is appropriate because Shirley expressly discloses such a possibility for the controller 50a but not for the controller 50b.

Second, repositioning the bowl temperature controller 50b above the substrate as the Examiner has suggested would interfere with the nozzle 35 and the related apparatus in Shirley. Please *see* Remarks contained in Amendment "C" filed April 1, 2008. In response, the Examiner argued that a skilled engineer could come up with a solution to this problem, and she even suggested one: a "nozzle fit[] in the center of radial gas jets." Office action, p. 3. Without addressing the merit of this suggestion, its merit is not the point. Whether a skilled engineer could produce the suggested construction is not the appropriate inquiry. The appropriate inquiry is would she. That is, would a person of skill in the art have been motivated to modify the reference as proposed, at the time the application was filed and without applicant's claims in view. In her rejection quoted above, the Examiner correctly noted that expectation of success is a requirement for obviousness. But she has neglected the most important requirement: some objective reason to do so in the first place. The Supreme Court decision in *KSR, Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007), does not obviate this basic requirement. That case only emphasized that the reason to modify a reference need not come from the reference itself (though it can). The reason can come from any objective source (such as the nature of the problem to be solved, generally available knowledge, etc.), but it must be present.

Third, even in the case of the plate temperature controller 50a, Shirley explains that arrangement proximate the back side 71 is preferred, "as such a method may be less likely to damage components or features on the front side 72." Col. 4, lines 24-27. In view of this teaching when no liquid is present, i.e. in the chill plate assembly 30, it certainly is not obvious from Shirley to employ the less preferred front-side placement when a coating liquid is present, i.e. in the bowl coater assembly 20, when even more damage -- interference with coating application -- would have been expected to occur (*see* next paragraph).

What is missing from the rejection is any reason to do as the Examiner suggests. Historically, temperature control of an optical disc substrate has been achieved from underneath while coating liquids such as resist material are spread on the upper surface. This is because it was considered likely to interfere with the coating step if thermal sources were directed at the coating surface, and ultimately at the liquid being coated, while being applied. Hence, the art itself provided reason not to make the modification suggested by the Examiner. The inventors here were the first to suggest direct coating-temperature control as a means to achieve precise, real-time temperature gradients, and corresponding viscosity gradients, in the coating layer to

facilitate the desired spreading effect. This innovation has eliminated problems associated with temperature control from underneath the substrate, which is attenuated based on the thermal conductivity (resistivity), heat capacity and other physical properties of the substrate, its thickness and other experimental uncertainties. Notice that in both the cited base references (Shirley and Kim, discussed below), temperature control is achieved from underneath the substrate while the coating is being applied. For these reasons, in addition to those already described during prosecution (which the panel is requested to review), the obviousness rejection of claim 1 based on Shirley is also legally deficient.

Rejection under 35 USC § 103(a) over Kim in view of Thakur

Like Shirley, temperature control in Kim is effected from underneath the substrate. As the Examiner has acknowledged, the lamps 24, 26 in Thakur appear to be standard visible-light lamps. *See* last non-final Office action, p. 7. Such lamps would flood the substrate with EM energy in an uncontrolled way that would not be effective to generate a "locally selective temperature gradient" as claimed. Moreover, the lamps 24 and 26 in Thakur are not used for the same reason as the infrared energy (via optical cable 52) in Kim. In Kim, IR energy is provided to the backside of a wafer to regulate spreading of a liquid resist material on the front side of the wafer, similar to Shirley. Conversely, in Thakur a coating layer is applied via a spray of liquid droplets deposited over the substrate surface, and the lamps 24, 26 are used simply to "deliver a sufficient amount of energy to the liquid droplets for causing the liquid droplets to vaporize, react, or decompose and transform the parent material into a solid." Thakur, col. 7 lines 49-52. In other words, the lamps 24 and 26 in Thakur are used to vaporize the atomized droplets sprayed from the nozzle 14, so the remaining solids may be deposited on the substrate surface.

These are two entirely different processes. The Examiner has argued Thakur is relied on merely to disclose supplying a thermal energy source above the substrate as opposed to below it in Kim. However, in order to modify Kim according to this teaching there must be some nexus between Kim and the teaching sought to be borrowed from Thakur that might suggest the combination. Here, there is none. The coating modes in the two references are entirely different; liquid spreading, versus deposition of atomized droplets followed by vaporization. Light bulbs used to vaporize the droplets are not comparable to precisely-targeted thermal sources to achieve a specific temperature profile or gradient in the substrate or in a liquid coating on that substrate to achieve uniform spreading of the liquid. Nor is such precision relevant in

Thakur because the only goal is to vaporize droplets, not to ensure their uniform spreading. Because these two processes, and the uses and functions of the thermal sources in each of Kim and Thakur are fundamentally different, there simply is no reason to borrow the 'above the substrate' feature from Thakur to suggest placing Kim's optical cables 52 or some other thermal source above the wafer in that reference.

The Examiner has characterized the two references as similar in that both "disclose the use of electromagnetic radiation to heat a semiconductor substrate," and argued that it is therefore obvious to modify Kim to include "the means for providing electromagnetic radiation to a semiconductor substrate [i.e. above the substrate] taught by Thankur." Office action, p. 4. Respectfully, this is an oversimplification. The focus of each is to achieve a uniform coating, not to heat the substrate. In Kim, heating the substrate from underneath is the means employed to achieve the desired end. Conversely, in Thakur deposition of atomized droplets over the surface is the means employed. Heat is used in Thakur not to regulate the substrate temperature, but to vaporize the deposited droplets to form a solid coating. In both cases, therefore, heating by itself is just a means to an end; more precisely it is a means to two different ends (uniform spreading in Kim, vaporization of droplets in Thankur). Thus, 'heating' by itself is no proper motivation to suggest combining the two references.

In summary, there is no motivation to use Thakur's lamps above the substrate in place of Kim's IR radiation from underneath to achieve uniform spreading of a liquid coating as in Kim. Thakur's lamps have no effect on the uniformity of the deposited coating. The means to supply and disperse the droplets would control uniformity. All Thakur's lamps do is vaporize the liquid to leave the solid coating material behind. There is no reasonable suggestion to combine these references. Their respective thermal sources are used for entirely different, incongruent purposes, and they would not be combined by a person of skill in the art. For these and the other reasons made of record during prosecution (which the panel is requested to review), it is respectfully submitted the rejection based on Kim/Thakur is also legally deficient.

Respectfully submitted,
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